

# PATENT COOPERATION TREATY

## PCT



### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 03 JUN 2005

PCT

Applicant's or agent's file reference PD030066		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/EP2004/004794		International filing date (day/month/year) 06.05.2004	Priority date (day/month/year) 01.07.2003	
International Patent Classification (IPC) or national classification and IPC H04N1/41				
Applicant THOMPSN LICENSING S.A.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 13.01.2005		Date of completion of this report 01.06.2005		
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Schoeyer, M Telephone No. +49 89 2399-2136 		

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/EP2004/004794

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

### Description, Pages

1-12 as originally filed

### Claims, Numbers

1-12 received on 13.01.2005 with letter of 12.01.2005

### Drawings, Sheets

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
    - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	12
Inventive step (IS)	Yes: Claims	1-11
	No: Claims	12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**I. Prior Art**

Reference is made to the following documents:

- D1: JEONG J ET AL: 'Adaptive Huffman coding of 2-D DCT coefficients for image sequence compression' SIGNAL PROCESSING. IMAGE COMMUNICATION, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 7, no. 1, 1 March 1995 (1995-03-01), pages 1-11, XP004047118 ISSN: 0923-5965
- D2: VON RODEN T: 'H.261 and MPEG1-a comparison' COMPUTERS AND COMMUNICATIONS, 1996., CONFERENCE PROCEEDINGS OF THE 1996 IEEE FIFTEENTH ANNUAL INTERNATIONAL PHOENIX CONFERENCE ON SCOTTSDALE, AZ, USA 27-29 MARCH 1996, NEW YORK, NY, USA, IEEE, US, 27 March 1996 (1996-03-27), pages 65-71, XP010158346 ISBN: 0-7803-3255-5
- D3: LLADOS-BERNAUS R ET AL: 'Codeword assignment for fixed-length entropy coded video streams' DATA COMPRESSION CONFERENCE, 1998. DCC '98. PROCEEDINGS SNOWBIRD, UT, USA 30 MARCH-1 APRIL 1998, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, 30 March 1998 (1998-03-30), pages 269-278, XP010276625 ISBN: 0-8186-8406-2

**II. Novelty & Inventive Step**

The present application meets the requirements of Article 33(1) PCT, because the subject-matter of claims 1-11 is new in the sense of Article 33(2) PCT and involves inventive step in the sense of Article 33(3) PCT (see however under VIII).

None of the prior art documents describes the specific assignment of run-length code words as used (decoding claims 4,8). As there is no hint in the prior art for such an

assignment, the subject-matter of a clarified set of claims 1-11 is considered to novel and involve inventive step.

However (see also under VIII) the subject-matter of claim 12 is considered to be anticipated by any data disk.

#### **IV. Industrial Applicability**

The subject-matter of claims 1-12 meets the requirements of Article 33(4) PCT because it is industrially applicable in the field of subtitles.

#### **Re Item VII**

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 are not mentioned in the description.
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

#### **Re Item VII**

##### **Article 6 PCT**

The definition of the range of runlengths as used in the 2nd step of claim 1 is unclear because, this defined range does not appear to have any technical meaning. In fact it is only stated in claim 1 that in two cases said defined range is exceeded. Looking at figure 3 it appears as if a first range might be meant ( $L < 63$ ), but surely in the other cases mentioned in claim 1,  $L < 16384$ .

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

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The wording of claims 1 and 4 is inconsistent. While it is quite clear from claim 4 how the assignment of code words actually looks like, the person skilled in the art is quite clueless with regard to claim 1. Other than that two or three bytes are used for encoding a first color, and one, three or four bytes are used for encoding a 2nd color, no information is given to the structure of the encoded data (e.g. color information, which bytes and which bits are set).

Similar issues concerning the clarity and inconsistencies applies to claim 7

The subject-matter of claim 12 is unclear because based on the data on a disc its encoding process cannot be deduced.

Claims

1. A method for run-length encoding of a data stream,  
the data stream comprising bitmap formatted subtitle  
or menu data for video presentation on a display,  
wherein the subtitle or menu data include graphics  
or text or both, comprising the steps of
- defining a preferred color;
  - defining a range of run-lengths;
  - encoding pixels of the preferred color to first  
code words with two or three bytes, wherein said  
first code words comprise a run-length value, and  
wherein the run-length value comprised in first  
code words having three bytes exceeds said defined  
range and may exceed the width of the display;
  - encoding pixels of another than the preferred  
color to second code words with one, three or four  
bytes, wherein the second code words comprise a  
color value, and wherein second code words having  
three or four bytes comprise a run-length value,  
and wherein the run-length value comprised in  
second code words having four bytes exceeds said  
defined range and may exceed the width of the  
display.
2. Method according to claim 1, wherein said color  
values and the preferred color are mapped with a  
look-up table to display colors.
3. Method according to claim 1 or 2, wherein the  
shortest redundant code word is used for line  
synchronization.

4. Method for run-length decoding of an encoded data stream for a video presentation on a display, comprising the steps of

- determining the first byte of a code word;
- 5    - if said first byte has not a defined first value, decoding said first byte to a single pixel having individual color defined by the value of said first byte, the color being other than a defined first color;
- 10    - if said first byte has the defined first value, determining the first and second bit of the following byte being the second byte;
- 15    - if the first and second bit of the second byte have a first value, decoding the remaining bits of the second byte to a sequence of pixels of the defined first color, wherein said remaining bits of the second byte define the sequence length;
- 20    - if the first and second bit of the second byte have a second value, decoding said remaining bits of the second byte together with the following third byte to a sequence of pixels of the defined first color, wherein said remaining bits of the second byte and said third byte define the sequence length, and wherein said sequence length may exceed the display width;
- 25    - if the first and second bit of the second byte have a third value, decoding said remaining bits of the second byte together with the third byte to a sequence of pixels, wherein said remaining bits of the second byte define the sequence length and the third byte defines the pixels color; and
- 30    - if the first and second bit of the second byte have a fourth value, decoding said remaining bits



of the second byte together with the third and a following fourth byte, wherein said remaining bits of the second byte and the third byte define the sequence length and the fourth byte defines the pixel color, and wherein said sequence length may exceed the display width.

5. Method according to the previous claim, wherein said defining of a pixel color from the first, third or fourth byte and from said first value comprises using a look-up table.

6. Method according to claim 4 or 5, wherein the encoded data stream for a video presentation is a separate layer overlaying other video data on the display, further comprising the step of selecting a portion of said separate layer for displaying.

7. An apparatus for run-length encoding of a data stream comprising bitmap formatted subtitle or menu data for a visual presentation on a display, wherein the subtitle or menu data include graphics or text or both, comprising

- means for defining a first color;
- means for defining a range of run-lengths;
- means for encoding pixels of the first color to first code words with two or three bytes, wherein said first code words comprise a run-length value, and wherein the run-length value comprised in first code words having three bytes exceeds said defined range and may exceed the width of the display;

- means for encoding pixels of another than the first color to second code words with one, three or four bytes, wherein the second code words comprise a color value, and wherein second code words having three or four bytes comprise a run-length value, and wherein the run-length value comprised in second code words having four bytes exceeds said defined range and may exceed the width of the display.

8. An apparatus for run-length decoding of an encoded data stream containing compressed bitmap formatted subtitle or menu data for video application, comprising

- means for determining code word length, wherein the first byte of a code word is evaluated, and wherein if said first byte has another than a defined first value then said code word length is determined to be one byte, and otherwise the first and second bit of the following, second byte are evaluated, and depending on said first and second bit the code word length is determined to be two, three or four bytes respectively;
- means for decoding code words determined to be one byte long to single pixels having a color defined by said one byte, the color being different from a defined first color;
- means for decoding code words determined to be two bytes long to sequences of pixels of the defined first color, wherein the sequence length is defined by the remaining bits of the second byte of the code word;

means for decoding code words determined to be three bytes long either to sequences of pixels of the defined first color, wherein the sequence length may exceed the width of the video display and is defined by the third byte and the remaining bits of the second byte, or to sequences of pixels of equal color other than the defined first color, wherein the sequence length is defined by the remaining bits of the second byte; and

- means for decoding code words determined to be four bytes long to sequences of pixels of equal color other than the defined first color, wherein the sequence length may exceed the width of the video display.

9. Apparatus according to the previous claim, wherein the means for decoding code words having two bytes that include a sequence length of zero as a sync code word, further comprising means for decoding said sync code word to an end-of-line indication.

10. Apparatus according to any of the claims 7-9, further comprising look-up table means for mapping between said color values, including said defined first color, and display colors.

11. Apparatus according to any of claims 7-10, wherein said encoded data stream is distributed to multiple transport packets.

12. Disc containing data encoded according to any of the claims 1-3.